

WHAT IS CLAIMED IS:

1. An AC adapter for use in charging a secondary battery which is contained in or mounted on a main body, said AC adapter comprising:
 - a primary side circuit for turning, by using a switching element, an input DC voltage applied to a primary winding of a transformer on and off;
 - a secondary side circuit for rectifying and smoothing an AC voltage induced in a secondary winding of said transformer to produce an adapter voltage;
 - a voltage control circuit for detecting a variation of said adapter voltage to produce a voltage control signal;
 - a constant current control circuit for detecting a charging current flowing in said secondary side circuit to produce a constant current control signal;
 - a photocoupler for feeding said voltage control signal and said constant current control signal as a feedback signal back to said primary side circuit;
 - a switching control circuit for controlling, in response to said feedback signal, on and off of said switching element; and
 - detection means, disposed in said secondary side circuit, for detecting that said charging current decreases less than a set current value to produce a detected signal, whereby said voltage control circuit operates so as to repeatedly operations comprising the steps of gradually lowering said adapter voltage and of heightening, in response to said detected signal, said adapter voltage by a predetermined voltage.
2. An AC adapter as claimed in claim 1, wherein said main body comprises a portable telephone set.
3. An AC adapter as claimed in claim 1, wherein said predetermined voltage is equal to 100 millivolts.

4. An AC adapter as claimed in claim 1, wherein further comprising a reference voltage generating circuit for supplying a reference voltage to said voltage control circuit, said voltage control circuit controlling said adapter voltage so as to change said adapter voltage by changing said reference voltage by said reference voltage generating circuit.

5. An AC adapter as claimed in claim 4, wherein said main body comprises a portable telephone set.

6. A method of charging, by using an adapter voltage, a secondary battery which is contained in or mounted on a main body, said method comprising the steps of:

a) gradually lowering said adapter voltage;

b) heightening said adapter voltage by a predetermined voltage when a charging current flowing through said secondary battery is less than a set current value; and

c) repeating said steps a) and b).

7. A method as claimed in claim 6, wherein said predetermined voltage is equal to 100 millivolts.